Small ports aiming at sustainable operation: holistic thinking as a stepping stone : Public report from the project 30MILES

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Small ports aiming at sustainable operation: holistic thinking as a stepping stone

Public report from the project 30MILES

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ABSTRACT

The 30MILES project aims at sustainably developing lively water tourism in the eastern Gulf of Finland, part of the Baltic Sea. Within the project, preferences of Finnish and Estonian boaters were probed in a query. Our discussion of responses to the query's three open-ended questions considers the scientific frameworks of sustainable development and ecosystem services. Literature review, combined with the results of the 30MILES project, reveals boaters' love of nature and environmental consciousness as well as its constraints. These findings, however, contrast with the insensitivity of boating to the state of the environment documented in a few studies. Literature also suggests an insufficient understanding of one of the key environmental issues of the Baltic Sea, that is, eutrophication, both within the boating industry and among boaters of the Baltic Sea region. The report reviews existing literature on the environmental impacts of boating. In minimising these impacts, recreational ports are considered local sites of multi-level environmental governance. In practice, by providing boaters with the necessary infrastructure to, for instance, perform appropriate waste chores, recreational ports simultaneously invest in good customer service and support sustainable boating. Furthermore, investing in such environmental protection likely strengthens the competitiveness of recreational port business. Our conclusion outlines a route map to sustainable port operation. The report offers information for both port operators and urban planners in coastal regions.

Keywords: small ports, recreational ports, boating, Baltic Sea, Gulf of Finland, Finland, Estonia, sustainable development, ecosystem services, environmental governance

CONTENTS

Preface

Are you a boater? Looking back at your recent visits in guest harbours, what was your most memorable visit last summer? Why? Does the following account describe it?

Your first encounter with the place was a recommendation from a friend. Subsequently, you did an internet search with the name of the place to find more information. The homepage of the port was at top of the list of search results. The page was current, and looked promising. When planning your trip online, you could see what the harbour had to offer, and could book a berth for your vessel. While booking the berth, information about the depth of the dock was also convenient, especially for those operating big boats, to ensure the vessel would fit in the port.

On arrival, clear guideposts and signs directed you to the piers from the sea. At the well-maintained pier, the harbour master grabbed the stern to attach the boat, or, if not the harbour master personally, another equally helpful and competent personnel member assisted in berthing your boat safely. After your warm welcome, you were also informed of the variety of services, attractions and leisure activities available in the port and the adjacent area. If you arrived at the port by dark or when all the piers were full, and you had not booked a berth in advance, you could have moored your vessel to a buoy and waited for guidance there, well protected from the winds and the waves.

The harbour services were multiple and carefully planned. Initially, conveniently placed and faultlessly functioning were water faucets, power sources, showers, toilets, pump-outs for sewage holding tanks, waste containers and fuelling points, that is, crucial infrastructure for boaters. The port also provided easy access to swim in the sea, separated from the dock, and a public sauna. Additionally available was, for instance, a restaurant serving quality dishes, much appreciated by boaters living on-board with little possibilities to cook. A small shop sold high-class local products, including freshly-smoked fish. In the immediate vicinity was a grocery store for any other needs. A small extra fee also enabled ordering groceries to the port without needing to visit the store in person. The barbeque could be freely used. Dishes could be washed at the kitchen provided for visitors' use. Laundry facilities were in the utility room. The port's playground was available to those travelling with small children. The nearby

town was accessible by public transport, renting a bike or by foot. Finally, especially at night, the harbour master guaranteed a secure and peaceful atmosphere for visitors to lie back and relax.

Overall, the port was tidy and spacious, and offered a wide range of high standard services, with a strong emphasis on safety and comfort. Simultaneously, the port was surrounded by beautiful nature with a feel of genuine marine lifestyle.

Does any of this sound familiar? Or appealing?

1. Introduction

This report is written as part of the Finnish–Estonian project 30MILES *(Small port every 30 miles apart – Development of services for lively water tourism in the Eastern Gulf of Finland*). The project establishes a ring of small ports on the Eastern Gulf of Finland. Efforts to jointly improve the services in six guest harbours from both Finland and Estonia pay special attention to the sustainability of the services that the ports provide for visiting boaters.

The project involved determining boaters' preferences towards small ports and their services in summer 2016 by an online questionnaire. This 30MILES query received 366 responses: mostly (322) in Finnish, with a small proportion both in Swedish (27, from Swedish speaking Finns) and Estonian (17). Most of the respondents were boaters (85%), men (69%) and aged approximately 40–60 (54%). Overall, the respondents had a moderate or high socioeconomic status: the majority (56%) of respondents had a university level degree. One quarter (26%) of respondents estimated their annual household income before taxes as over €100 000, one fifth (20%) estimated their annual income as €70 001–100 000 and another quarter (23%) as €40 001–70 000. Literature supports the demographic characteristics of the respondents' level of education and income, suggesting the socioeconomic status of boaters in the Baltic Sea is often middle-class and higher (Hasselström 2008a). Finns are generally a boating nation: according to the Finnish Sailing and Boating Federation including all rowboats and dinghies, Finland has proportionally more boats than any other country[1]. The rowboat is the most popular type of boat in Finland (Askola et al. 2017). This report, however, focuses on motor boating and sailing.[2]

The preface of this report relates to the summary of answers to an open-ended question posed in the 30MILES query. As part of the query, the respondents were asked to describe the guest harbour of their dreams. Notably, the results summarised above are a generalisation. The preferences of all the respondents are not alike. The respondents' dream guest harbours vary between a more pristine environment and solitude, to having more services, activities and entertainment. The most frequent preferences regarding a dream guest

[1] http://spv.fi/teema/aloita-veneily

[2] The respondents' background information and other data collected in the 30MILES query are described in more detail in University of Helsinki (2016).

harbour are illustrated in the word cloud below (Figure 1). Other questions of the 30MILES query discussed in this report are presented in Table 1.

Figure 1. Word cloud presenting the respondents' 50 most common wishes for the guest harbour of their dreams (Question a. in Table 1) with the size of the word expressing its frequency within the answers. Created with WordArt (wordart.com).

	Question	Number of responses
a.	How would you describe your dream guest harbour?	179
b.	The 30MILES project aims at the sustainable development of the small ports in the Eastern Gulf of Finland. How would you describe a sustainable small port?	150
c.	Are there any services or facilities that are often missing in the guest harbours that you would like to use?	151

Table 1. Open-ended questions of the 30MILES query discussed in the report.

The above 30MILES summary of the respondents' dream guest harbours strongly resembles the instructions for port operators provided by the Finnish Keep the Archipelago Tidy Association (Pidä Saaristo Siistinä ry, PSS) for running a so-called good harbour.[3] Generally, a so-called good harbour is easily accessible, safe and tidy, regardless of the size or range of services provided in the port. More precisely, guest berths are clearly marked, distances are bearable, for instance, from piers to toilets and showers, and waste management is appropriately organised. Other activities of the area do not disturb port visitors, and no noise disrupts their sleep at night. The friendly and helpful personnel have a basic understanding of boating-related issues, and they are ready to inform the visitors about the surrounding services and attractions. The harbour fee is appropriate, boaters' wishes and criticisms are listened to, and standards are kept high during the whole season, not only at the beginning. On top of this, a local speciality makes the visitors come back to the port again.

Compared to the PSS instructions, the 30MILES summary highlights the multi-phased nature of the recreational experience in terms of marketing a tourist location. This experience includes at least phases of anticipation, travel-to, on-site, travel-back and recollection (Needham & Rollins 2009). For example, the PSS instructions ignore the port information available on the internet, instead focusing on what happens at the site: tidy toilets are particularly mentioned as a harbour's best advertisement (see footnote 3). Hollink (2015) actually found the internet to be the most important source of information for recreational boaters from Estonia and Finland when planning their boating route.[4]

Based on the 30MILES query whose respondents were mainly boaters and the PSS instructions, special services or extreme experiences are not of greatest importance to a guest harbour's visitors. On the contrary, predominant issues in both are firstly, a safe and sheltered port, and secondly, well-organised and -maintained port infrastructure and facilities that function faultlessly and are easily found, accessed and used.

The 30MILES query data repeatedly mentions water faucets, power sources, pump-outs for sewage holding tanks and waste containers, emphasising their location and functionality.

[3] http://www.pidasaaristosiistina.fi/ymparistotietoa/tietoa_satamille
[4] Based on a supplementary 30MILES query, more specific information will still be obtained during the project on where boaters receive their information about ports.

Expectations of the three first-mentioned issues include their availability at the pier and their ease of usage, without metres of hoses and wires lying around. The respondent boaters also stated that at many ports, pump-outs for sewage holding tanks were insufficient, and sorting of waste (organic waste, tins) impossible. The strong emphasis on waste management in the 30MILES query data is consistent with wishes of boaters in Helsinki (Lodenius 2004).

Many 30MILES respondents also highlighted the tidiness of facilities, such as toilets, showers and saunas. Respondents additionally mentioned that ports often lack a decent sauna having public hours. Before arrival, boaters wish for current information on available free space in ports, and about dock depth. Other desirable issues include wi-fi connection for visitors during their stay, and available local quality food at the port.

Along with the desire for basic services, many of the respondents simultaneously associate nature and urbanity as a port attraction: while many respondents consider proximity to nature important, simultaneously desirable is on-site information on the services, attractions, events and history of the surrounding area. Additionally, guest harbours are mentioned often lacking activities for children and sports possibilities.

Considering the respondents' preferences, service profiles and characteristics of the myriad of small ports in the Eastern Gulf of Finland notably differ from each other, depending on, for instance, their location and resulting restrictions. Distance to the closest city, along with its services and cultural attractions are influential factors varying from port to port. Thus, each port can profile and develop itself solely on its individual site-specific terms. Moreover, the 30MILES project takes place in both Finland and Estonia and boating-related differences between the two countries exist (see Luoma et al. 2018). Firstly, the archipelago is plentiful on the southern Finnish coast, but almost non-existent on the northern Estonian coast. Secondly, a license to drive a boat is required in Estonia, but not in Finland. Thirdly, compared to Finland, Estonia's current boating culture is relatively young due to the Soviet era impact.

In relation to the guest harbour of the respondents' dreams, when asked to describe a sustainable small port, the respondents of the 30MILES query notably voice again the importance of decent waste disposal. This partly indicates the respondents' preferences for

a dream guest harbour are in line with what they consider sustainable. A waste disposal system, including pump-outs for sewage holding tanks is the main issue for respondents regarding a sustainable small port. Other important elements mentioned include an emphasis on safety and the use of solar power or other renewable sources of energy, along with the possibility of purchasing environmentally friendly products, such as detergents. Interestingly, responses rarely consider ecolabel certifications important.

However, respondents consider economic and social aspects important, claiming a sustainable port should be operated locally and not by a chain, for example. One respondent strongly states as follows: 'The basic services must be secured in another way than only by boaters' costs. Permanent residents uphold the place, and boaters bring metwurst to the bread'. Another respondent describes a sustainable small port from a non-boat owner perspective: 'Boats and canoes are rented there. Also, those without a boat of their own can take a ride with the others and get the chance to experience travelling on the sea'. Some respondents additionally suggest the port infrastructure is used sustainably when used also outside the short boating season.

This report follows the 30MILES project perspective: the sustainability of boating and small ports are viewed within a holistic framework, covering environmental, economic and social perspectives. The latter includes safety-related aspects and issues of well-being. Within this framework, the infrastructure and facilities of a guest harbour, illustrated at the report preface, evidently contribute to the sustainability of the locale. This report will later supplement and evaluate the results of the 30MILES query by applying perspectives from existing literature.

2. Key frameworks

2.1 Sustainability

Building upon Elkington (1997, see also, e.g. Hansmann et al. 2012; Høgevold et al. 2015; Thabrew et al. 2018; for a literature review on sustainable ports, see Parviainen 2016), sustainability is scientifically understood as a three-dimensional phenomenon. Sustainability thus becomes operational through a balanced interplay between contextually related environmental, economic and social aspects. In practice, for a single enterprise, association or venue, such as a guest harbour, to follow the triple-bottom line (e.g. Høgevold et al. 2015; Thabrew et al. 2018) of sustainability, it should operate in an economically stable manner and simultaneously responsibly advocate for both environmental protection as well as social equality and well-being improvements.

How can sustainable development be achieved? Hammer et al. (2003) argue a basic prerequisite in achieving sustainability in the archipelago and coastal regions is a better understanding of their social sphere. According to the authors, integrated socio-economic driving forces, such as population structure, means of transportation, decision-making arrangements, property and user rights, structure the way of life in the archipelago, as well as in any given context. The way of life in turn affects the natural environment. One of the main environmental consequences of human activity on the Baltic Sea is eutrophication (HELCOM 2014; Öberg 2016).

In line with Hammer et al. (2003), Jensen (2007) discusses how a change in lifestyle is commonly considered a precondition of sustainable development. The lifestyle concept, however, can refer to four different levels (global, national, positional or sub-cultural and individual). This conceptual ambiguity necessitates specifying what life style is actually being used to refer to when its relation to sustainability is addressed. Lifestyle *per se* is not problematic to sustainability; a lifestyle can include both respect and contempt for the environment. Notable in framing sustainable development as a question of lifestyle is also that different social factors, such as the attitudes and values of the stakeholders involved in environmental management, can strongly affect whether the implementation of protective

or controlling actions succeeds or fails (see, e.g. Gray et al. 2010; Suuronen et al. 2010; Wolsink 2010; Needham & Szuster 2011; Voyer et al. 2012; Andersson et al. 2014; Muhar et al. 2017). This report applies the above notions in discussing the relationship between boaters' environmental behaviour and practices of small port operation.

2.2 Ecosystem services

The idea of the three dimensions of sustainability crosses another currently prominent framework for the environmental sciences: ecosystem services. Ecosystem services refer to the ecological processes and goods through which human populations benefit from nature. In scientific literature, the framework is largely built upon Daily (1997), Costanza et al. (1997) and the Millennium Ecosystem Assessment (2005). In practice, ecosystem services fulfil human life and, ultimately, sustain it. Much human economy relies on ecosystem services, such as provisioning goods, including food and fuel. In addition, human economy relies on cultural ecosystem services commonly utilised within many tourism industries, for instance, recreation in nature and landscapes. Ecosystems also offer a multitude of non-market benefits that may uphold a deeply emotional attachment to the environment (Fletcher et al. 2014): the ecosystem services provided for people in their everyday surroundings trigger socio-cultural aspects, such as a sense of place, aesthetics and cultural heritage. Lastly, regulating and supporting ecosystem services, such as climate regulation or photosynthesis contribute to the mere existence of life.

When combining the frameworks of sustainability and ecosystem services, the 30MILES query interestingly reveals a clear preference for natural features in urban guest harbours. This is notable because empirical evidence documents how interacting with nature delivers measurable cognitive, physiological, psychological, social, spiritual and tangible benefits to people (see Keniger et al. 2013). Furthermore, scientific literature suggests the ecosystem services provided by urban nature strongly affect cities' sustainability (e.g. Chiesura 2004; Tzoulas et al. 2007; Niemelä et al. 2010; Wolch et al. 2014).

Chiesura (2004) emphasises how the presence of natural areas, such as parks, in urban environment serves important immaterial and non-consumptive human needs, by enriching

human life with meanings and emotions. Tzoulas et al. (2007), moreover, suggest ecologically healthy urban environments can contribute to improved socio-economic benefits for urban communities investing in green infrastructure (see also Pretty et al. 2005; Fuller et al. 2007; Mitchell & Popham 2008; Wolch et al. 2014; Soga et al. 2016). In terms of providing such beneficial services to urban dwellers, small-scale urban green spaces similar to parks include allotment areas, public and private gardens, school green areas, cemeteries, golf courses and other sports fields, greenways and riparian areas of creeks, rivers and bays (Colding et al. 2006; Goddard et al. 2010; Roy et al. 2012; Iojă et al. 2014).

Compared to the importance of urban greenery, the blueness of the sea may be significant to the sustainability of coastal cities. For example, Lodenius' (2004) study on the attitudes of Helsinki citizens to the city shores revealed the importance of the shores to the local residents (see also Fletcher et al. 2014). Lodenius (2004) found Helsinki citizens often visit the shores, and participate in many different activities at them. In addition, nearly all the responded boaters in Lodenius' study mentioned the importance of the sea in calming down and finding peace of mind. Karvinen (1997), on the other hand, considers the waterfront as an urban borderline. Illustratively, Karvinen presents that otherwise associating in monitored urban environments, by swimming at the seashore a city dweller has the possibility to experience the wildness of nature. Consistently, Gee & Burkhard (2010) claim the sea can constitute an alien environment commanding respect and awe. Coeterier et al. (1997, in Chiesura 2004), in turn, discovered how landscapes with water especially evoke the feeling of being one with nature. As for economic relevance to coastal cities, sun or beach are among the most important decision-making criteria of Europeans in choosing their holiday destinations (Eurobarometer 2016).

Konu et al. (2017) additionally estimate that nature tourism in Finland has significant potential to grow, partly due to increasing public interest in the health benefits of nature. This potential and interest are noteworthy regarding the 30MILES project as the current development of recreational ports is historically linked to a shift in the use of urban waterfront. Sairinen & Kumpulainen (2004) discuss how regeneration in urban planning in the post-1970s has resulted in the conversion of both brownfields, that is, territories formerly used for industrial purposes, and greenbelts, that is, undeveloped natural land surrounding modern cities, into commercial, residential and recreational areas. When it comes to water-

based tourism, it is also remarkable that in terms of culture and recreational possibilities, such as swimming, diving, water sports, boating, jigging, non-winter fishing, beach recreation, ice sports and going on a cruise, the Baltic Sea bears a considerable importance for all of its coastal states (Ahtiainen et al. 2013).

The seasonality of boating poses obvious challenges for a recreational port's year-round revenue. However, the results by Ahtiainen et al. (2013) show that wintertime belongs to the cultural value of the Baltic Sea. In their study, winter visits constituted one-third of sea visits in Finland, Sweden and Russia. In addition, some services considerable for guest harbours to maintain outside the short boating season are mentioned by the respondents of the 30MILES query. These include a restaurant or café, public sauna with swimming access, gym, massage, marked nature paths and renting of bikes or other outdoor sports equipment. Guest harbours can allow access to sea recreation during both summer and winter. Ice coverage, however, sets limits to the range of possible activities.





3. Does the state of the sea affect coastal tourism?

Within the 30MILES project, the Baltic Sea is considered a marine ecosystem serving its surrounding nations year-round. Ahtiainen et al. (2013) show Swedes, Danes and Finns are both the most active boaters and the most active recreational users of the Baltic Sea overall. Beach recreation and swimming are the most popular leisure activities in the Baltic Sea.

Boating thus belongs to the cultural relevance of the Baltic Sea. However, the literature dealing with the relationship between boating and the state of the environment has a rather dichotomic message. A report by The Swedish Environmental Protection Agency (SEPA), edited by Hasselström (2008a) is our starting point to discuss this literature. Citations of results from scientific articles and other publications evaluate the current situation of the Baltic Sea tourism presented in the SEPA report. The SEPA report is based on interviews carried out by a group of scholars with representatives from coastal tourism and recreation industries in all nine littoral Baltic Sea countries: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden. The industries considered in the study mainly include beach tourism, recreational fishing, boating, cruises and parts of the real estate market.

Hasselström (2008a) states the interviews with representatives from the coastal tourism and recreation industries of the Baltic Sea countries suggest these industries are somewhat unaffected by the current environmental problems of the region, that is, eutrophication. Based on the interviews, blue-green algae blooms pose the biggest environmental nuisance to the coastal tourism industries in the Baltic Sea region. However, despite reduced aesthetic and recreational values along the coast, so far, bookings and profits of the above-mentioned businesses have not been significantly impacted by blue-green algae blooms. Therefore, environmental concern does not currently seem to pose a big problem for the tourism and recreation industries in the Baltic Sea. The interviews with tourism representatives from around the region indicate visitors sometimes more-highly rate such factors as weather conditions and provided services than water quality. However, the afore-mentioned interviews also suggest an increase in blue-green algae bloom frequency or duration is likely harmful, especially to beach tourism.

The above-described situation is somewhat perplexing concerning boating. Based on the SEPA interviews (Hasselström 2008a), the main reason for people to go boating in the Baltic Sea is to enjoy nature and the environment. However, boating is somewhat unaffected by the current environmental problems of the region, along with other sectors. This chapter firstly discusses the findings of the SEPA report regarding coastal tourism and recreation in general, and then discusses the findings specifically in relation to boating.

3.1 Coastal tourism in general

Based on the interviews from the Baltic Sea countries, Hasselström (2008a) discusses three alternative hypotheses to explain why coastal tourism and recreational industries in the Baltic Sea as a whole seem largely unaffected by the current environmental problems of the region.

Hypothesis 1

Firstly, Hasselström (2008a) explains the observation within the tourism industries in the nine littoral countries, by suggesting an absence of uniform understanding of the state of the Baltic Sea and human influence on it. Around the region, interviewees generally considered a major oil spill accident a disastrous risk for coastal tourism. However, in contrast with this frightening scenario, some interviewees considered blue-green algae bloom a so-called natural phenomenon, something normal to live with, rather than an environmental problem. The causes and consequences of eutrophication seem not to be clear to all the interviewees. In line with Hasselström's (2008a) first hypothesis, Falconer et al. (1999), relate the over-generational abundancy of blue-green algae blooms has sometimes led to people accepting the situation as normal for their region. Moreover, the amount of valid information available to the public on the state of the environment likely plays an important role. Lyytimäki (2007) illustrates the long-term driving forces of eutrophication are often downplayed in the Finnish press, with the news coverage on eutrophication often centring on temporary occurrences of blue-green algae blooms. In other words, news covers singular events largely connected

to weather conditions, resulting in eutrophication becoming only temporarily visible to the public. In addition, the news coverage on eutrophication likely differs between countries.

Linked to the first hypothesis, Hasselström (2008a) divides the Baltic Sea countries into two groups, both in terms of experienced current effects and potential future effects. Coastal tourism industries in Denmark, Finland, Germany and Sweden report a higher dependency on the marine environment than those in Estonia, Latvia, Lithuania, Poland and Russia. To explain this difference, Hasselström suggests the interviewees from the former group of countries are generally more aware of environmental issues than those from the latter. Alternatively, when choosing a holiday location, the state of the environment plays a bigger role for tourists in the former than the latter group. In the country-specific annexes of the SEPA report, Kurki et al. (2008) state the Finnish interviews give an overall impression that tourism industries are affected by eutrophication of the Baltic Sea. In contrast, Volchkova (2008) states the lack of available ecological information differentiates Russian tourists from their foreign counterparts.

Hypothesis 2

Hasselström's (2008a) second hypothesis to explain the small effect of the state of the environment on coastal tourism industries is the incapacity of the Baltic Sea tourism industries to fit the high demand of visitors. The oversupply of tourists results in full bookings without industrial economic loss, although some people would choose other destinations due to environmental issues. Consequently, it seems consumers rather than tourism industries bear the burden of environmental problems.

The second hypothesis is associated with the work of Cucculelli & Goffi (2016). The scholars studied Italian small destinations of excellence, that is, small tourist destinations recognised by international and national certifications (Blue Flag, Blue Sail, Orange Flag and The Most Beautiful Villages in Italy). In conclusion, Cucculelli & Goffi suggest sustainability measures can be undertaken not only for preserving the ecological balance of a tourist destination, but also to enhance its competitiveness. In other words, by making sustainability a priority issue in their agenda, destination managers can adopt competitive strategies not only based on business-related factors. Cucculelli & Goffi's research sample included destinations from

both the mainland and the coast of Italy. Regarding the above-mentioned, it is noteworthy there are also differences between tourists, with environmental issues likely listed among the top priorities for only a small niche (Karlsson & Dolnicar 2016). In addition, the type of trip determines whether environmental issues are largely considered or not when the vacation choice is made (Hedlund 2013). However, interestingly for the 30MILES project, two demographic features describing environmentally friendly tourists are high education and high income (Dolnicar, Crouch & Long 2008), both of which fit many boaters' profile (Hasselström 2008a).

Additionally, a Eurobarometer report (2016) provides information on the tourism preferences of Europeans. According to the report, while choosing the site for their main holiday, half (54%) of the respondents did not consider themselves influenced by any environmental aspects. Measured environmental aspects included nature protection measures, environmentally friendly practices introduced by the holiday destination, and a possible ecolabel certification of the destination or other service provider. The results show differences between countries. Estonia ranks on top, with 82% of respondents being uninfluenced by any environmental aspect when choosing their holiday destination. From the Baltic Sea states, Denmark (67%), Sweden (66%) and Finland (65%) follow next, with Lithuanians (49%) being the most environmentally demanding tourists in the Baltic Sea region. Russia is not included in the Eurobarometer.

Hypothesis 3

Hasselström's (2008a) third explanatory hypothesis is that the state of the Baltic Sea environment is currently considered good enough not to affect holiday-makers' vacation choices. Such an interpretation raises an obvious question: what then is the threshold whereby the state of the marine environment will constrain coastal tourists? Furthermore, more recent results from Ahtiainen et al. (2013) oppose Hasselström's (2008a) third hypothesis. Even if the Baltic Sea environment would be generally considered good enough, Ahtiainen et al. (2013) found the citizens of all Baltic Sea countries are worried about the state of the sea. People most concerned were from Finland, Russia (only the Kaliningrad and the Saint Petersburg regions included) and Sweden. The different results regarding people's views on the state of the Baltic Sea may be partly explained by the differences in the study

samples: whereas Hasselström (2008a) based his interpretations on interviews with representatives from the tourism sector, Ahtiainen et al. (2013) probed preferences from the Baltic Sea citizens in general. The time span between the two studies is also relatively long, and progress in environmental consciousness among citizens may have occurred during the years. On the other hand, despite expressing concern about the Baltic Sea, its citizens generally do not feel themselves personally influencing the state of the sea, nor are they willing to pay for costs of improvements (Ahtiainen et al. 2013). Living in the smallest countries of the region, respondents from Lithuania, Latvia and Estonia regarded their contribution to the state of the sea as the smallest. In contributing financially to the state of the environment, Poles, Danes and Finns were the most willing to pay for improvements.

In addition, Ahtiainen et al. (2013) observed respondents most convinced of the non-restriction of their recreational opportunities by water quality were Danes and Swedes. Russians and Poles, on the contrary, were most convinced that water quality restricts their recreational opportunities. Only Russians felt an improvement in water quality would increase their frequency of recreational visits to the Baltic Sea. Ahtiainen et al. explain the differences in citizens' perceptions by the fact that Danes and Swedes are more frequent users of the Baltic Sea than Russians and Poles. Hence, Danes and Swedes may possess such experience-based knowledge on local water quality that more occasional users often lack. Consequently, frequent users are more capable of choosing places to visit with probable high water quality. On the other hand, respondents living in the eastern parts of the Baltic Sea generally regarded its condition worse than citizens in the western parts of the region, and Ahtiainen et al. claim the division in respondents' views roughly corresponds to the current status of eutrophication in the Baltic Sea, where the eastern sub-regions are most heavily affected. Moreover, Estonian, Russian and Polish respondents had the strongest views regarding the availability of identical water recreation possibilities at non-Baltic sites. Considering such substitute sites, the most pessimistic were Swedes and Danes.

3.2 Recreational boating in focus

The most sensitive water-based recreational activities regarding environmental issues are often recognised as swimming and recreational fishing (Hasselström 2008a; Dupont 2004; Vesterinen et al. 2010). In contrast, boating is considered rather environmentally insensitive (Sandström 1996, in Vesterinen et al. 2010; Dupont 2004; Hasselström 2008a; Vesterinen et al. 2010). Partially explaining these findings is that swimming and fishing occur directly in water (Dupont 2004; Hasselström 2008a) whereas boating does not. Boaters consequently avoid the health hazard and discomfort of being in touch with waters tainted by blue-green algae, for example. However, the 30MILES query revealed boaters wish their dream guest harbour providing a place to swim (see also Lodenius 2004) illustrating the two activities are linked.

The mobile nature of boating further explains its environmental insensitivity. The spatial scale of boating often extends beyond boaters' home municipality (Vesterinen et al. 2010). Therefore, at least at the local scale, the state of the environment may not preclude boating because boaters can search for a more favourable site elsewhere in case of environmental nuisances. At least the Swedish archipelago has experienced such a relocation of boating: due to public reports on blue-green algae blooms, Swedish boaters have taken their boats from the Baltic Sea, for instance, to the west coast of Sweden on the North Sea (Hasselström 2008b).

As stated earlier, the SEPA report (Hasselström 2008a) offers rather dichotomic information on boaters' relationship with the marine environment. Based on the interviews with boating representatives from the Baltic Sea countries, Hasselström (2008a) generally portrays boaters as nature-lovers with respect for environmental issues. Issues detected in the interviews include the consideration of algae blooms a common aesthetic nuisance (Hasselström 2008a), relocation of boating in Sweden (Hasselström 2008b), mechanical problems sometimes experienced in Finland (Kurki et al. 2008), and water occasionally smelling and looking bad at some local sites in Lithuania (Semėnienė 2008). However, Hasselström (2008a) overall suggests boaters still not being greatly affected by blue-green algae blooms.

Illustrative of this ambivalence is how one respondent in the SEPA report argues that '[b]oaters go to the sea despite any extra charges posed on [them] or independent of the deterioration of environmental quality' (Kurki et al. 2008, 147), and another 'that [s]ailors like sailing and they go sailing as long as it[']s not killing them' (Tuhkanen 2008, 86). Further, the respondents simultaneously see potential in boating and sailing in educating people on the environment and promoting environmental responsibility, which is a valid argument. The view is consistent with a great body of scientific research that indicates a positive correlation between pleasant nature experiences and pro-environmentalism (see, e.g. Duerden & Witt 2010; Zhang et al. 2014; Collado et al. 2015; Lee et al. 2015; Soga et al. 2015). Additionally, many studies identify 'learning about nature' a central feature of sustainable tourism (see Dolnicar, Crouch & Long 2008).

From a practical point of view, Duerden and Witt (2010; see also Mobley et al. 2010) suggest an effective method for promoting pro-environmental behaviour involves providing people with both opportunities for attaining environmental knowledge on the given subject and applying it in practice. Research carried out at Cape de Creus, Mediterranean Sea consistently suggests if boaters practiced underwater activities, such as snorkelling, and personally saw the ecologically vulnerable Posidonia oceanica seagrass meadows, they would avoid anchoring on them (Lloret et al. 2008). Such a learning practice may be plausible with boating, considering also issues such as eutrophication. However, one sailing representative in the SEPA report claims despite media relating poor water quality in the Baltic Sea, as a sailor, he does not see or feel it (Tuhkanen 2008).

Despite contradictory, from a port operator's perspective, the above observations ultimately propose one major issue: climate change, and its potential outcomes. Negative publicity on blue-green algae blooms has already relocated boaters (Hasselström 2008b), and global warming may further boost the relocation effect in the future, by causing an increase in the amount and duration of the blooms. However, this link is still uncertain. On the one hand, boaters view water quality and algal blooms as both the biggest current and future potential problem for their activity (Lodenius 2004; Kurki et al. 2008), as well as negative publicity of locations tainted by blue-green algae may discourage people from beginning boating as a hobby (Kurki et al. 2008). On the other hand, increasing numbers of hot summer days may undercut the effect of increasing blue-green algae, encouraging boaters to spend more time

on the sea (Vesterinen et al. 2010). Overall, an increase in blue-green algae blooms likely poses the most potential nuisance for swimmers and fishers (Hasselström 2008a, Vesterinen et al. 2010). Nevertheless, based on assessed business risks resulting from climate change, tourism, along with transport, financial sector, health care, aviation and oil and gas, is internationally considered one of the six economic sectors less prepared and, thus, locating in the so-called danger zone (KPMG 2008; Scott 2011).

4. Environmental impacts of boating

Within the domain of their pastime, boaters paradoxically have the potential to damage the same environment they use for their recreation (Wester & Eklund, 2011). The environmental impacts of boating are numerous, well known and caused both ashore, for example, in ports, and offshore. Non-academic boating publications often provide a list of boating's environmental impacts (see, e.g. The Ocean Conservancy 2001; ECNI 2009)[5]. Below, a common list is supplemented with scientific references.

Starting from emissions, boat engines release exhausts containing oil residues, such as hydrocarbons, whereas potential sources of pollution are also fuel spills and oily bilge water. Toxic compounds of antifouling paints in turn dissolve into waters from the boat hull. If discharged in nature, black water or sewage and grey water from washings on-board can, for instance boost algal production and contribute to eutrophication of natural waters. Also, all sorts of litter, including hazardous waste, such as time-expired emergency flares, stress the environment.

Usual hotspots for the impacts mentioned are commonly found at ports (Davenport & Davenport 2006). Toxic concentrations of, for instance copper (CU) and zinc (Zn) leached from antifouling paints are detected worldwide particularly in small ports and harbours due to high boat density and limited water exchange of such closed areas (Konstantinou & Albanis 2004; Ytreberg et al. 2010; Bighiu 2017). In addition, despite prohibition of TBT (tributyltin) in antifouling paints since 1989, releases to the environment are still detected (Eklund et al. 2008). The detected TBT likely originates from older layers of paint that have been covered with newer coats, later scrubbed off at the end of the season when the hulls are cleaned before docking.

Compounds dissolving from antifouling paints are harmful to many marine organisms, including seaweed, algae, macrophytes, crustacean, barnacles, gastropods, mussels, aquatic snails, fish and turtles (Konstantinou & Albanis 2004; Leon & Warnken 2008; Bighiu 2017).

[5] On its website, PSS provides information on the environmental impacts of boating in Finnish: http://www.pidasaaristosiistina.fi/ymparistotietoa.

When released in the environment, compounds such as copper may accumulate in the food chain (Leon & Warnken 2008). Along with compounds leaching from antifouling paints, also harmful to marine organisms is bilge water containing gasoline and oil (Lloret et al. 2008). For example, septic leachate, wastewater discharges and non-point sources of human and animal excrements can affect the presence of coli bacteria in natural waters (An et al. 2002).

If released to nature, plastics and other litter exert stress on the environment by harming, even killing, marine wildlife through entanglement and ingestion (Derraik 2002; Ivar do Sul & Costa 2007; Moore 2008; UNEP 2009). Moreover, researchers' attention has recently turned to microplastics, in other words, plastic particles 5 mm or less in diameter. The ingestion of microplastics is harmful to a wide variety of biota, including invertebrates, fish, birds and mammals, while simultaneously, microplastics can absorb different harmful compounds, and amass on sea beds and beaches (see GESAMP 2015). In addition, experiments with, for example, Baltic Sea zooplankton taxa and invertebrate substantiate the transfer of microplastic particles up the food chain (Setälä et al. 2014; 2016).

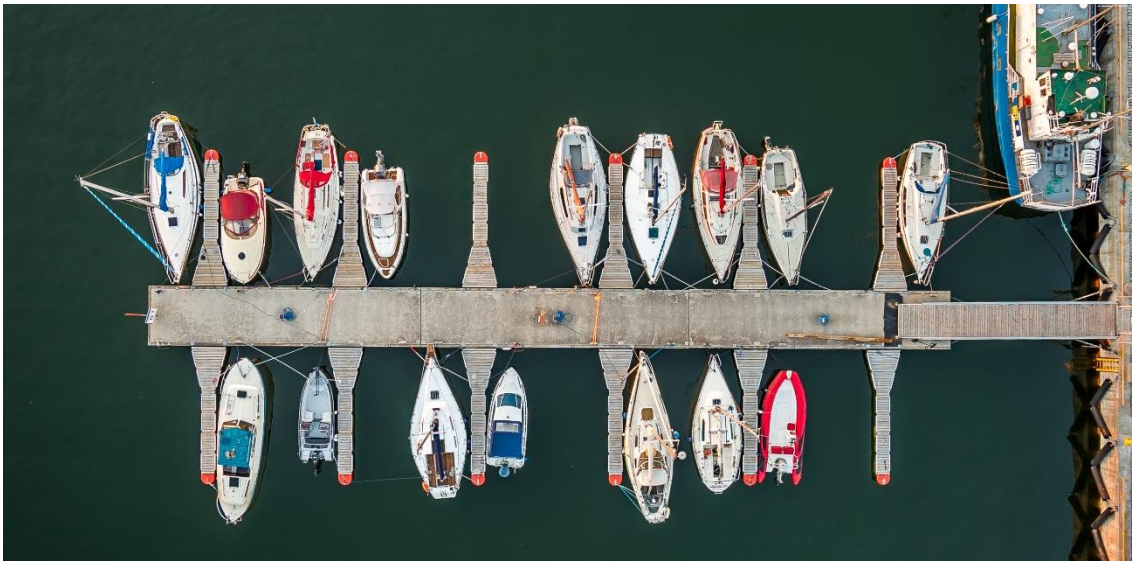
Other environmental impacts of boating result from wave action, anchoring and noise disturbance. In closed marine areas, wave-action from boats increases resuspension, thus elevating turbidity, which, in turn, reduces light availability affecting macrophytic vegetation and the composition of species (Eriksson et al. 2004). Mussels, oysters and other epifauna are also disturbed by wave action induced from recreational boating (Wall et al. 2005; Bishop 2008; Lorenz et al. 2013). Anchoring can destabilise and cause physical damage to sea beds, especially in sites with a high frequency of boats, such as coastal urbanised areas or marine protected areas (Francour et al. 1999; Duarte 2002; Milazzo et al. 2004; Widmer & Underwood 2004; Davenport & Davenport 2006; West et al. 2007; Lloret et al 2008). Propellers potentially cause physical damage to marine vegetation (Eriksson et al. 2004; Leon & Warnken 2008).

Noise disturbance of boating is generated by engines of motorised watercraft. Motor noise may disturb wildlife, such as seabirds, marine mammals and fish. However, disturbance to wildlife may also be caused by, for instance boaters intruding breeding areas of waterfowl (Rönkä et al. 2005) or the physical striking of marine mammals (Davenport & Davenport 2006; Leon & Warnken 2008; Lloret et al 2008.) Lastly, through hull-fouling, boaters can

contribute to the transmission of non-indigenous species, especially, to the secondary spreading of organisms already introduced to the area (Floerl et al. 2004; Davenport & Davenport 2006; Minchin et al. 2006; Williams 2007; Klein & Vernaque 2008; for a boaters' guide to the issue, see IMO 2012).

As summarised above, scientific research reveals the numerous negative impacts of boating on the environment. The extent of the environmental impacts of boating, however, depends on the perspective taken. Globally, the major polluters of marine waters are land-based, such as nutrient loads from industrial and agricultural runoff, and discharges from municipal wastewater treatment plants. According to the European Confederation of Nautical Industries (ECNI 2009), the share of maritime transport, boating included, is estimated to represent approx.. 12% of all marine pollution. Subsequently, the share of boating is estimated to represents less than 1% of the total.

Consequently, boating's share of overall marine pollution is minuscule (ECNI 2009). However, scientific literature on the environmental impacts of boating illustrates the locality of environmental impacts of boating, which do not only result in pollution. In a given context, they can be substantial, even drastic. In a sheltered harbour, the effects may easily accumulate and, besides the aesthetic nuisance and ecological damage, can even form a health risk to people (e.g. Chorus & Bartram 1999; An et al. 2002). This, in turn, can negatively affect the popularity of the port among its potential users: both boaters and other visitors.



5. Harbours as sites of environmental governance

Albeit often touristic venues and meeting places for locals, a guest harbour does not only involve holiday-makers' summertime recreation. Regarding the sustainability theme of the 30MILES project, a guest harbour is a site of environmental governance. Environmental governance in this report refers to the control and guidance of people's behaviour, and the means to introduce them to environmentally friendly practices. This chapter aims at making visible the boater-targeted governance taking place in a recreational port.

First of all, the governance of a recreational port is multi-layered. The operations of a recreational port are legally structured by international, national, regional and local regulations. For example, the EU directive on port reception facilities for ship-generated waste and cargo residues (2000/59/EC)[6] obliges both commercial harbours and recreational ports to draw up a waste reception and handling plan. Additionally, ports are expected to inform their service users about the port's waste management. Subsequently, stepping down from the EU level, there is variation between regional authorities in Finland in whether they require the waste reception and handling plans from recreational ports or not (Sito Oy 2014[7]). Moreover, some municipalities require the waste reception plan when a port can accommodate a minimum of 20 or 50 boats, for example. Some guest harbours, however, have organised their waste disposal properly even without an official plan. This is because waste disposal has been perceived part of customer service, even a means of competition, and the port in general has been considered an important part of the whole city image.

Continuing descending from level to level, in a recreational port, the ultimate subjects of environmental governance are individual boaters. From this perspective, Needham and Szuster (2011) discuss how recreationist behaviour can be managed both directly and indirectly. Direct management strategies, such as restricting the number of people allowed in a designated area, affect user behaviour by limitations and bans. Indirect strategies, on the other hand, attempt to influence people's decision-making, in other words, to make them

[6] The EU directive 2000/59/EC partly forms the legal background to the Finnish Maritime Environmental Protection Act 1672/2009 and Maritime Environmental Protection Decree 76/2010 by which the waste management of leisure boat marinas are governed (for more information on waste management legislation in Finnish leisure boat marinas, see Kymenvaara et al. 2015).
[7] Commissioned by the Finnish Transport Safety Agency (Trafi).

voluntarily shape their own behaviour in a desired direction. These strategies work through recreationists' freedom of choice and include providing and maintaining facilities for their use. Recreationists themselves often prefer indirect strategies when asked how to manage different impacts of tourism.

Practically speaking, a port can encourage and educate boaters in environmentally sound behaviour in three ways. Firstly, addressing environmental issues can involve providing information on, for instance the organisation of a port's waste disposal, or the general environmental impacts of boating (e.g. Lloret et al. 2008; Wester & Eklund 2011). From the governance perspective, provided information aims at organising boaters' thinking in an intended order, and making them act accordingly (Agrawal 2005). As a practical example, Cottrell & Graefe (1997) found that awareness of the environmental consequences of dumping sewage in the sea was the most important indicator of boaters' use of a sewage pump-out station.

Secondly, infrastructure such as pump-outs for sewage holding tanks and waste containers, materially facilitate proper waste practices and enable boaters to act responsibly. In other words, boaters' behaviour can be steered and directed by a port's hired staff, but also by so-called governance artefacts (Woolgar & Neyland 2013), such as pump-outs for sewage holding tanks, waste containers and information boards. Following Latour (1994), for instance nonhuman pump-outs for sewage holding tanks perform tasks of environmental governance delegated to them by people. These material artefacts co-operate with environmental managers and educators by encouraging and enabling boaters to translate their environmentally conscious knowledge and attitudes into corresponding behaviour. Problematic situations, such as when a pump-out for sewage holding tanks does not function properly, however, emphasise the role of competent personnel.

Regarding legislation, infrastructure is also involved in the distribution of accountability (Woolgar & Neyland 2013). EU legislation is an example of an upper level of governance setting port requirements that are fulfilled by recreational ports in the existence of appropriately organised and well-maintained waste infrastructure. Such an infrastructure consequently passes environmental responsibility from the port operator to individual

boaters. In nature destinations, on the contrary, the logic of educating recreationists to take away their own trash removes the need to provide waste facilities.[8]

Thirdly, economic incentives can promote boaters' environmentally friendly behaviour. However, such incentives should be implemented carefully and context-specifically. Discussing fiscal incentives to change citizen behaviour, Dobson (2007) points out how people can, for instance develop environmentally hazardous attempts to avoid financial penalties resulting from disposing of over-quota rubbish.

5.1 Boaters' challenges in practicing correct procedures

Relevant to directing boaters' behaviour is recognising a lot of environmental governance involves targeting people with moral expectations of so-called doing the right thing. According to Dobson (2007), environmental citizens are committed to the common good, recognising both their international and intergenerational responsibilities. In practice, addressing such moral expectations concerns attempts at raising people's environmental consciousness which scientific literature generally considers a unity, consisting of three aspects: knowledge, attitude and behaviour (e.g. Pe'er & Goldman 2007; Sánchez & Lafuente 2008; Duerden & Witt 2010; Mobley et al. 2010; Lee et al. 2015).

From a managerial perspective, the above-mentioned three-fold character of environmental consciousness results in possible challenges and compromises. According to Pe'er and Goldman (2007), insufficient knowledge about the consequences of one's environmental behaviour can result that an environmentally friendly attitude is not translated into corresponding responsible acts. Wester & Eklund (2011), on the other hand, illustrate how otherwise environmentally sound behaviour can be obstructed by situational constraints. One possible such constraint at a tourist site are the infrastructural circumstances that,

[8] This is the policy of, for example, the Finnish state-owned enterprise Metsähallitus (http://www.luontoon.fi/roskatonretkeily).

compared to those at home, are beyond a visitor's personal control and to which an individual thus can only adjust oneself (Dolnicar 2010).

Practical example of a constraining situation in a guest harbour is when a boater arrives at a port and would like to empty the vessel's sewage holding tank, but the pump-out is either cumbersomely located or is not working properly due to poor maintenance. Based on both query responses and the 30MILES project interviews (Luoma et al. 2018), unfortunately, this is a rather common situation in Finland. Recently, Pönni (2016) documented Finnish boaters consistently hoping for more pump-out stations, both beyond the Archipelago Sea and close to cities. The relevancy of such infrastructure as pump-outs for sewage holding tanks was also addressed in the SEPA interviews (Kurki et al. 2008; Czajkowski et al. 2008). In Finland, the network of pump-out stations was regarded infrequent and restricting boaters' route plans. Without proper waste disposal and pump-out systems, the Polish coast in turn was considered unattractive by yachtsmen, who instead choose to sail to Sweden or Norway.

In their case study, Wester & Eklund (2011) noted almost half of the respondent Swedish, Finnish and Danish boaters dumped their sewage in the sea. The respondents' overall willingness to change fuel, oil, motor or driving pattern to a more environmentally friendly option was also quite low. Five years later, in Pönni's (2016) study of Finnish boaters' attitudes of the network of floating pump-out stations in Finland, nearly half (47%) the respondents stated they never drain their sewage in natural waters. Another 47% stated they empty their sewage holding tank in natural waters occasionally, and 6–7% at least every second time.

Wester & Eklund (2011) and Pönni's (2016) findings are remarkable, considering both boaters' common wishes for investments in pump-outs for sewage holding tanks in coastal regions and the prohibition of draining boat-originated sewage in the sea in Finland in 2005 **(**Government Decree 435/2000). In Pönni's (2016) study, the respondent boaters' reasons for draining sewage in the sea were most often situational constraints: for instance, boaters suffered from a lack of a conveniently located pump-out station along their route, or an available pump-out station was broken. Other common reasons include emptying the sewage

holding tank only at the open sea[9], and considering cross-boundary boating, poorer pump-out services in Sweden and Estonia than in Finland, which possibly forces boaters to drain sewage in the sea while abroad. Pönni, furthermore, suggests draining sewage in the sea may actually often be a deep-rooted habit, rather than neglect, as the ones who drain their sewage in the sea most often are rather aged and have boated long. Additionally, using a floating pump-out station may be challenging for elderly boaters.

Overall, Pönni's (2016) results suggest a positive attitude of Finnish boaters towards the network of floating pump-out stations, with the majority of boaters considering pump-outs very important for environmental protection and boating. Askola et al. (2017) consistently reported environmental consciousness had increased among Finnish boaters due to stricter regulations, and boats consequently being better equipped for on-board waste management. Notably, the managerial role of the boat industry is central to this change: providing on-board facilities, for example for collecting sewage or sorting waste, involves encouraging and enabling environmentally friendly practices even when on-board with limited space (ECNI 2009; Sito Oy 2014). Moreover, according to Wester & Eklund (2011), when environmentally sound behaviour is established, it tends to continue. To affect the behaviour of an individual, the critical point is thus in the beginning: how to get a reluctant or hesitant individual to take up a new environmentally friendly habit? For a guest harbour, the answer lies in promoting environmentally sound boating by planning the site carefully to make boaters' intended behaviour as effortless as possible.

In the light of the above-mentioned, absence of infrastructure boaters require or malfunctions in using such facilities do not belong only to the environmental dimension of sustainability but rather the value of infrastructure is holistic. When asked whether something the respondent would readily use is currently missing from guest harbours, one respondent of the 30MILES query brings up the insufficiency of waste disposal in the Finnish ports and states illustratively as follows: 'It is irritating to take the on-board sorted and separately stored waste to the same big container'. Wester & Eklund's (2011) study notably revealed 70% of respondent boaters sorted their waste on-board, despite practical obstacles caused by limited space. Moreover, deficient facilities can cause dissatisfaction among visitors of coastal areas

[9] Draining boat-originated sewage in the sea is still allowed beyond 12 nautical miles from the nearest shore (Government Decree 435/2000).

regarding their recreational experience (Shafer & Inglis 2000; Lew & Larson 2005; Needham & Szuster 2011) as well as the quality of a recreational experience can be diminished by perceptions of litter (Manning et al. 2004; Oigman-Pszczol & Creed 2007). Sito Oy (2014) notably states waste containers commonly become overloaded in Finnish recreational ports during the short summer season.

Additionally, in the daily life of a guest harbour, the role of the port infrastructure is not only practical. One respondent of the 30MILES query clearly points to the abstract value associated with a port's infrastructure. When asked to describe a sustainable small port, the respondent writes: 'Prime quality in emission and waste management at least *creates an image* of a sustainably built small port (emphasis added)'. The respondent relates how neglect in the maintenance of, for instance a pump-out for sewage holding tanks, consequently fails to maintain the image of a port operating sustainably. In fact, a pump-out for sewage holding tanks can hold up various social aspects meaningful to guest harbour visitors, such as cleanness, hygiene, health, aesthetics, comfort and convenience, as well as nature protection. Conversely, a malfunctioning pump-out station can result in sewage drained in the sea by a disappointed boater, and consequently, the great cultural value of the Baltic Sea to its surrounding nations (Ahtiainen et al. 2013) can be juxtaposed with negative connotations of the sea as a dump for sewage (Gee & Burkhard 2010).

5.2 Safety and well-being of boaters

Within the system approach to sustainability, not only the environmental impacts of boating need to be controlled. When unregulated, boating can negatively affect both the state of the environment and the safety and well-being of boaters themselves (Widmer & Underwood 2004; Balaguer et al. 2011; Diedrich et al. 2011). In the study by Lodenius (2004), the three biggest problems mentioned by boaters in Helsinki were water quality, littering and reckless driving. Tseng et al. (2009) also mention reckless conduct, along with the use of alcohol or drugs as common types of at-risk behaviour reported by boaters. Finnish statistics list the most common causes of boating accidents as technical problems and human error; in mortal accidents, causes also include alcohol and weather conditions (Askola et al. 2017).

Studies on crowding reveal that in closed areas with high frequency of visitors, such as popular bays and lakes, boaters tend to perceive the setting as less safe and less enjoyable as the numbers of encountered boats increases (Tseng et al. 2009; Diedrich et al. 2011). However, the perception of crowding is only experienced when the high use level of a site is negatively perceived as disrupting or interfering with one's goals or values (Tseng et al. 2009). Tolerance of encounters with other people is also setting- and activity-specific, culture dependent and, essentially, subjective (Tseng et al. 2009; Needham & Rollins 2009; Eroglu et al. 2005; Vaske & Donnelly 2002).

Besides, increasing levels of boating may increase the number of boating-related accidents (Swett et al. 2011), as well as conflicts between differently oriented users of the same environment (Needham & Rollins 2009; Tseng et al. 2009; Gray et al. 2010). In their study on a proposed marine protected area in British Columbia, Canada, Gray et al. (2010) found more negative reactions of sailboat operators than motorboat operators to motorised craft. Sailboat operators with an engine on their vessel also viewed themselves as being essentially different from motorboat owners. Comparing motorised and non-motorised recreational activities, Gray et al. (2010) conclude that a persistent, often asymmetrical, conflict exists between motorised and non-motorised craft in a marine environment. Tseng et al. (2009) discuss how boaters perceive encounters with jet skis and other small personal watercraft putting them at risk, and consider conflicts between jet-ski operators and boaters asymmetrical, in other words one-way. In practice, jet-ski operators may remain oblivious to

the conflict with boaters because only in two-way conflicts is resentment or dislike expressed in both directions (Needham & Rollins 2009).

Regarding means of governance in a recreational port, the prevention of crowding, accidents and conflicts is about, for instance directing traffic with clearly marked waterways, and careful positioning and maintenance of piers and buoys. However, the cardinal elements of safe boating are not completely universal, but depend on the activity, setting and type of vessel used (McKnight et al. 2007; Tseng et al. 2009). Some safety-related developments have also recently occurred in the Finnish boat population. The overall Finnish boat population in 2016 was approximately 1 157 500 vessels, showing 57% growth from 2004 (Askola et al. 2017). During this time span, the number of kayaks and canoes has more than doubled to almost 100 000 units, and the number of water scooters has more than tripled, to approximately 8 500 units. These developments indicate a more diverse Finnish boating culture for the future. Accordingly, if wishing to attract, for example kayakers, harbours need to provide landing stages lower than regular piers to facilitate kayakers' safe arrival.

Stakeholder interviews carried out in the 30MILES project additionally noticed the role of cultural differences in the way boats are berthed (see Luoma et al. 2018). In some southern countries outside the Baltic Sea, such as in Holland, boats are commonly berthed side-by-side, and people walk to the pier across others' boats. This custom, however, does not belong to the Finnish boating culture, and consequently, relatively many berths are required to accommodate visiting boaters in Finnish ports.

Finally, port spaciousness is repeatedly mentioned in the 30MILES query data but crowding-related concerns are not. Only one respondent writes critically: 'The atmosphere in guest harbours is cramped. The operation [of a guest harbour] disturbs local people who have to share their limited space due to tourism'. This quotation, although unique among the responses, addresses an important issue. According to Kelly (1998), practical work on sustainability requires simultaneously considering two aspects. Firstly, the general principles of sustainable development, discussed throughout the report, and secondly, the context-specific wants and needs of the people for whom the sustainable development is actually being designed at each case. Within the scope of the 30MILES project, guest harbours are often pictured as living rooms for both people visiting the region and local residents. In

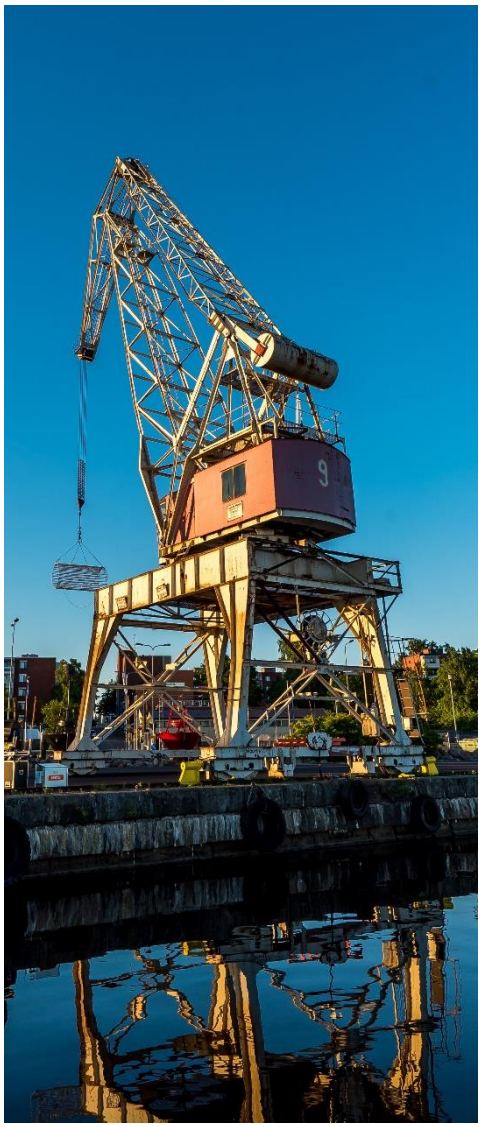
addition, port visitors include other customer groups than merely boaters. Accounting for the preferences of various groups is thus required when developing a sustainable port.

Subsequently, port ownership influences the progress of port development. On the one hand, a recreational port can be a privately-owned enterprise offering services to customers who can afford them. On the other hand, a municipal port and its often nature-like surroundings can be considered a socially-funded public utility, universally accessible, with tax payers' money covering costs and investments. Importantly, regarding urban planning, scientific literature increasingly recognizes access to green space as an environmental justice concern (see Wolch et al. 2014; Kabisch et al. 2016). Thomas (2015), moreover, challenges the common assumption that the health and well-being benefits obtained from open public access to natural spaces are universal.

Deery et al. (2012), in turn, highlight local residents being part of the so-called tourism product in many destinations. Regarding Kelly's (1998) latter principle, the modes of interaction between locals and tourists are thus central to the social impacts tourism potentially has on both the host community and their visitors. Deery et al. (2012) illustrate various social impacts potentially deriving from tourism. On the one hand, tourism can bring several social benefits to a region. Tourism can, for instance improve transport and other public infrastructure built to facilitate tourists' visits; increase vibrancy of the region and increase business opportunities for local entrepreneurs due to heightened visitor rates; enhance the sense of pride among host communities, as tourists want to visit their home region, with word of mouth furthering the publicity of the region. On the other hand, tourism has possible adverse social impacts: frustration and alienation of locals from their home community due to increasing numbers of people dwelling in their neighbourhoods; locals' resentment of tourists' ill manners, such as littering, or locals' dissatisfaction for both the changing character and physical appearance of the region due to serving the demands of tourism.

The above-mentioned perspectives constitute valuable information for port operators. However, providing universal answers to questions, such as to what extent is it profitable to increase the capacity of the harbour considering visitor satisfaction, the well-being of locals and conflict prevention, can be difficult. Social impacts are corporeally, emotionally and

cognitively felt factors of peoples' everyday lives and whether such aspects can be productively assessed in locally specific contexts with a prefilled check list of possibilities is questionable (Vanclay 2002). This uncertainty, along with lessons learned during the 30MILES project, suggests the role of holistic stakeholder involvement is important when aiming at the long-term sustainability of recreational ports. This includes that different user groups are heard and their concerns accommodated during the planning and developing of recreational ports. Moreover, principles to consider are preventing possible conflictual- and safety-endangering situations between different activities by careful spatial planning, and the cultural-historical and socio-demographic characteristics of the port's surroundings. These tasks are best performed in co-operation with the municipality and port development integrated in urban planning.



6. Conclusions

The objective of this report has been to clarify why and how the three dimensions of sustainability should be considered in the development of guest harbours. Overall, this report has understood a sustainable small port to stand upon three pillars. In other words, a sustainable port is expected to promote environmental protection and social well-being, while steadily running a profitable business with a stable stream of visitors, preferably throughout the year. A practical implication of the system view conducted in the report involves demonstrating the relevance of economic, social and environmental aspects even for a single matter, such as for the maintenance of pump-outs for sewage holding tanks, or the organisation of waste disposal more generally.

From a port operator's perspective, the results of the 30MILES query disclose a link between economic investments, customer satisfaction and positive contribution to the state of the surrounding environment. By providing the infrastructure that enables boaters to act in an environmentally responsible manner, a guest harbour promotes its own business and competitiveness in the long run. When the surrounding coastal environment is in good condition, it likely attracts boaters who, as described in the reviewed literature, are united by their love of nature. On the other hand, if the state of the environment is substandard, boaters are capable of choosing other destinations for their leisure.

Within the 30MILES project's scope, sustainable port operation covers the management of boating's environmental impacts. Thus, the report suggests that by guiding boaters' environmental behaviour, recreational ports can support a sustainable boater lifestyle and sustainable water tourism.

An eight-step route map to reach sustainable port operation is outlined in the context of the eastern Baltic Sea as a summary of the findings of the report.

1. Invest in safety

Safety is among boaters' top priorities. Maintain port homepages and ensure potential visitors are provided with updated information on essential safety issues in advance, such as the depth of the dock and how to best arrive at the port by sea. Provide visitors with a clear and informative map of the port's entrance. Take good care of jetties, piers and buoys, as well as guideposts and signs marking the routes, illumination of the port, emergency equipment and information boards. Emphasise the competence of the port personnel.

2. Invest in environmental protection

Boaters love nature and are environmentally conscious people who want to make use of the infrastructure, such as pump-outs for sewage holding tanks and waste containers that allows them to mitigate the environmental impacts of boating. Port operators' investments in environmental management potentially create value for visiting boaters, subsequently increasing the appeal of a port. Remember that water quality is crucial for both ecosystems and recreation. Boaters wish a possibility to swim in the port surroundings; however, environmental impacts tend to accumulate here, consequently posing considerable health risks. Provide such facilities for boat maintenance that prevent contaminants, such as sewage, litter, oil and antifouling paints, from ending up either in the water or the soil. Sell only environmentally friendly boating products, such as detergents. Consider using renewable sources of energy. Remember that clean seaside nature with its greenery and blueness likely attracts locals and other port visitors than only boaters. If carrying out operations outside the boating season, remember that, for instance water quality can be important for activities such as ice swimming.

3. Plan carefully

Carefully planned port infrastructure is customer-centric service design. Well-functioning infrastructure both underlays the basis of a convenient port experience, and involves issues

of safety and environmental protection. Think holistically, and in practice, ensure port facilities are effortless to find, safe to access and easy to use. Ensure facilities' capacity is sufficient relative to the number of visitors throughout the season. Acknowledge how the availability and condition of even basic facilities may affect boaters' route plans. Remember that customers have the best practical knowledge of the success of services. Therefore, involve port visitors when developing existing or new services. Use channels that reach your audiences when spreading information on the port and its services.

4. Maintain regularly

Once installed, ensure regular port infrastructure maintenance to guarantee its good condition and functioning. Moreover, note that malfunctions and shortages of port infrastructure can hamper boaters' otherwise environmentally sound behavior. Pay attention that, for instance port waste disposal supports sorting of waste on-board, and does not undermine such efforts. Also, attach, for instance pump-out stations with visible contact information, in case boaters face problems using them. Boaters also appreciate decent toilets, showers and saunas. Keep them tidy. Remember that negative experiences spread rapidly by word of mouth and social media.

5. Provide knowledge

In addition to functioning infrastructure, instructions and guidance on its use are important. Furthermore, learning about nature is characteristic for sustainable tourism, and recreational boating has potential for learning, especially about coastal ecosystems. Provide port visitors with knowledge about the coastal environment, and the potential pressures tourism can cause. Remember that environmentally responsible behaviour is based on corresponding attitudes and knowledge. Prevent false perceptions that may jeopardise the environment. Note that enhancing the environmental knowledge of visitors may activate a positive process, creating value for the port within all three pillars of sustainability. Keep track of developments in environmental knowledge, and ensure port personnel knowledge is adept.

6. Consider cultural differences

The Baltic Sea is surrounded by nine littoral countries: Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden. When promoting cross-boundary boating, ensure all important information and instructions are fluently written and available in several languages. Pay special attention to situations possibly hindering visitors' otherwise environmentally sound behaviour, such as problems with malfunctioning pump-outs for sewage holding tanks, and accidents possibly jeopardising the environment or people's safety. Encourage intercultural encounters, while simultaneously being aware of cultural differences potentially relevant for port operation, for instance, crowding and the berthing of boats. Remember that friendly port personnel with good language skills plays an important role in making a foreigner's stay a pleasant one.

7. Prevent conflicts

Guest harbours are meeting places for both locals and visitors of the area. Many people in addition to boaters tend to find them appealing. When developing the port, involve various stakeholders in the planning. Also, take into account the cultural-historical and socio-demographic characteristics of the port's surroundings to gain local support for developments and prevent future conflicts.

8. Co-operate

Guest harbours can provide residents with nature experiences, both within the city and beyond urban territory. Communities investing in green and blue space, and the ecosystem services they deliver, may also benefit socio-economically. As a port operator, co-operate with both the local municipality and local companies and organisations to create services for port visitors, and keep the surrounding nature in good condition. Remember that although a universal concept, sustainability only becomes operational in locally specific contexts. To promote sustainable water tourism along the coast, also co-operate with other near-by small ports.

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